

Understanding User Acquisition through Online Advertisements and Marketing systems

With a Case Study in Integrated marketing

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Abstract - The paper attempts at explaining and providing a model to understand user acquisition in businesses that use Online Advertisements and Marketing systems. It has tried to objectively define the parameters that are important in measuring impact of online advertisement platforms, and how new-age marketing systems need to be defined to achieve amazing marketing success

Keywords - online advertisement, integrated marketing, multi-channel attribution, Web 3.0

I. INTRODUCTION

There is a definite gap in understanding online advertisement formats and using marketing systems amongst the best of organizations across the world. Important questions like: How will one arrive at deciding where to advertise? What would be the future of Advertisement? How can one ensure super-linearity in advertising returns? And, How do marketing systems affect advertising? , are worrying advertisers and marketers across the world. Through this paper's work, I am attempting to provide certain models to mathematically and objectively define the reasons behind action and engagement occurring at the users' end, that actually contribute to successful business and sustaining competitive advantage for organizations across the world.

II. UNDERSTANDING USER ACQUISITION THROUGH ONLINE ADVERTISEMENT

Let us consider that all Ad platforms can be classified by the functions of intentions and demographics. "Action" is something that is the ideal return on investment for all advertisers.

Let us analyze the following domains/businesses across the spectrum and understand how advertisers are buying inventory for such products, using pulsing strategy, and assume scores for Demand generated for such products along with the Purchasing power of users. (I am using Alpha and Beta notations for less and more scores respectively)

Businesses	Pulsing	Demand (Qgt)	Purchasing power
DealsFn(d)	Beta	Beta	Beta
MobilPhone Fn(d)	Alpha	Beta	Beta
Entertainment Fn(d)	Beta	Beta	Beta
Insurance Fn(i)	Alpha	Beta	Alpha
Healthcare Fn(i)	Alpha	Beta	Alpha
Sports Fn(i)	Beta	Beta	Beta

Now let us consider that for most businesses, there will be 'g' firms that would be the main advertisers and any additions post those firms into the system will not affect the system behavior drastically.

For a specific time 't', there is a requirement for Engagement to happen so that the final "ACTION" is taken - which is nothing else but the buy decision.

We can therefore say

$E \propto i$

$E = i \times D$ [Considering D = Demographics as a constant]

For all firms "g", at time "t", the given equation can take a form of:

$$E_{gt} = i_{gt} \times D_t \quad (1)$$

$$\text{User Acquisition, } U^a = E_{gt} \times A_t$$

$$= i_{gt} \times D_t \times A_t \quad (2)$$

$$\text{Wherein, Action - } A_t = Q_{gt} \times P_{pt} \quad (3)$$

$$\text{Demand } Q_{gt} = Q_g (W_t, P_t, Ad_t) \quad (4)$$

[wherein Demand in a function of goodwill(W), price (P), and advertising(Ad)]

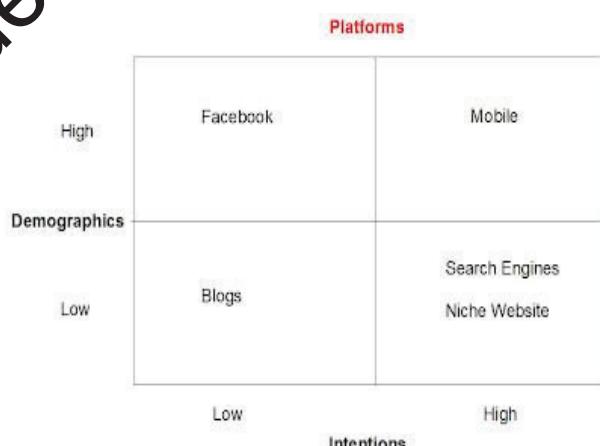
$$\text{Therefore, } A_t = Q_g (W_t, P_t, Ad_t) \times P_{pt} \quad (5)$$

$$\text{Now, } U^a = i_{gt} \times D_t \times Q_g (W_t, P_t, Ad_t) \times P_{pt}$$

This means that User acquisition is a functionality of intent, demographics, Demand function, and purchasing power.

So to exploit the given variables, there needs to be specific platforms along with specific ad formats that can maximize action and therefore user acquisition.

The following map will allow us to understand the probable platforms that make sense for improving the factors of " $i \times D$ " to improve the left-hand-side of the equation (the demand side)



Similarly, we can also map the Engagement v/s Action parameters to check on the kind of Ad formats that probably fit into the larger "i x D" equation:

		Ad formats	
		Deals	Videos
High		Search Advertisements	Apps/ Games
Action			
Low		Web banners	Content
		Low	High
		Engagement	

So the answer to better user acquisition is hidden somewhere between the usage of mobile devices and Apps/games. Super-linearity in advertising be achieved by larger number of human interactions and engagement in a platform (could be an App or a Game) ensuring amazing returns on investment and a better marketing success.

III. CONTRIBUTION OF MARKETING SYSTEMS AND MULTI-CHANNEL ATTRIBUTION IN UNDERSTANDING USER ACQUISITION (CASE STUDY OF PAGALGUY.COM AS AN ONLINE MARKETING MEDIUM V/S BUSINESS SCHOOLS IN INDIA)

Every year, b-schools are faced with the biggest challenge of strategically choosing communication channels for their Admission purposes, trying to ensure that they get it RIGHT.

They measure the results that come from each marketing channel they choose rather than a multi-channel strategy and measurement. They use certain channels incorrectly, without completely understanding the characteristic consumption pattern of their Applicants in that channel. They define usage of channel by the same prejudices that are wrong and need to be corrected.

So,

How will they figure out multi-channel attribution to their Applications each year?

How will They strategize for something that they don't completely understand?

How will they change from a broken system to a correct-system as soon as possible?

How will they improve effectiveness of their Admission campaign and therefore improve application numbers and maintain that for the coming years?

How will they stop random buying and learn to methodically identify channels that work for them, and the integration of such channels?

Consider the following multichannel strategy used by a b-school



This means that the bschool is using 6 different but integrated channels for its marketing program. If we consider that Results (Overall Results i.e.) is a function of engagement and action taken, then we can represent it as:

$$\text{Result} = f_n(\text{Action, Engagement})$$

Now, according to integrated marketing assumptions, the action and engagement can happen in two different channels at a given point in time "t".

Which means, that for a result R_t , the set of action and engagement can be (Pagalguy.com, Database Calling); wherein the action happened in PG but the engagement happened over database calling. Similarly, at a time "t+1", the $R_{(t+1)}$ can be (Database calling, Pagalguy.com); wherein action happened in database calling but engagement happened in Pagalguy.com.

Since it is impossible to attribute specific inputs to specific channels for results, the best can we can predict is the probability of engagement of a particular platform at a certain time for a result "R".

Mathematically, this would mean-

$$P(\text{PG}) = \text{Probability of student engaging with Pagalguy.com}$$

$$P(\text{C}) = \text{Probability of student engaging over a call}$$

$$R = \text{Result from the overall marketing system}$$

The Probability of a student engaging with a particular platform is directly proportional for the amount of time he spends on that platform, or the "exposure" to that platform.

Therefore, lets assume for our calculation's sake that a student spends 40% of his time on Pagalguy.com and the 20% of the time he is exposed to Calls from b-schools.

$$\text{Then } P(\text{PG}) = 0.4, \text{ and } P(\text{C}) = 0.2$$

We want to identify what will be the probability of engagement on Pagalguy, when there is a Result from the marketing system.

$$\text{This can be denoted as - } P(\text{PG} | R)$$

To find this probability, we will use the Bayes theorem (since there are multiple events associated with this probability)

Therefore,

$$P(\text{PG} | R) = [P(\text{PG}) * P(R | \text{PG})] / [P(\text{PG}) * P(R | \text{PG}) + P(\text{C}) * P(R | \text{C})]$$

Now, We will have to calculate the probability of a result for engagement happening in PG as well as calls.

$$P(R | \text{PG}) = \text{Time} \times \text{Activity} / (\text{1/Total number of options at a given time}) = 4 \times 5 \times (1/50)$$

$$[\text{Considering 4 hours total time, 5 pages viewed each time, and 50 B-schools as option during his visits}] = 0.2$$

$$P(R | \text{C}) = 0.1 \times 10 \times (1/100)$$

$$[\text{Considering 0.1 hours call time, 10 calls, and 100 bschools calling}] = 0.01$$

$$\text{Now, The } P(\text{PG} | R) = [0.4 \times 0.2] / [[0.4 \times 0.2] + [0.2 \times 0.01]] = 0.08 / 0.082 = 0.97$$

or 97% probability of Pagalguy engagement when Result is "R" from the marketing system. Similarly, we can calculate and attribute different probability scores to different sets of "(Action, Engagement)" to check how effective is the engagement of a particular medium and how it plays out for the marketing system.

Since, the college in this case is using 6 different channels, and given that there are two factors, the number of sets will be $6P_2$ (permutation), giving us about 30 such sets that will contribute to the overall results.

These sets need to be measured if one needs to figure out the Effectiveness of Every Channel used. But this is hard and near impossible due to complexity of the relationships and the improbability to tag an action to a particular channel. All we know is that together, form a cohesive system that provides the advantages of an "integrated" marketing system and allows us to measure the integrity of "Communication" that actually affect the efficiency of these 30 sets.

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